

## SECTION 07520 - MODIFIED BITUMEN ROOFING SYSTEM

### PART 1 - GENERAL

#### 1.01 RELATED DOCUMENTS:

- A. The Conditions of the Contract and applicable requirements of Division 1 govern this Section.
- B. Furnish and install an APP FR or SBS FR Class A, mineral surface modified bitumen roofing system, including but not limited to; preparation of the roof deck, installation of roofing insulation, installation of a new membrane system, flashing, sheet metal, expansion joints, counter flashing and other related items.
- C. Canopy roof: Unless noted otherwise on the drawings, provide modified bitumen roofing on ½" perlite board over metal deck.

#### 1.02 ASBESTOS PROHIBITED:

- A. Materials and/or equipment containing asbestos are prohibited.

#### 1.03 QUALITY ASSURANCE:

- A. Installer Certification: Upon request by Architect, obtain a written certification from the roofing system manufacturer that the installer is approved by manufacturer to install the specified roof.
- B. Insurance Certification: Provided complete system, which is listed for UL (Underwriter Laboratories) Class A external fire exposure and FM (Factory Mutual) Class I Wind resistant and internal fire construction.
- C. The roof shall be constructed of double layer roof insulation to achieve a minimum "R-Value" provided by the insulation types and thicknesses specified for each roof system. Insulation components may vary by roof membrane system and shall be supplied and installed as specified to achieve or exceed minimum thermal value requirements. Comply with local codes if higher "R-Value" is required.
- D. Fabrication of sheet metal roofing accessories shall conform to applicable SMACNA, NRCA and membrane manufacturer's published details and requirements.
- E. Slope: Roof shall slope ¼"/ft. minimum, achieved in the deck structure. All saddles shall be constructed at twice the slope of the deck.

#### 1.04 SUBMITTALS:

- A. Furnish complete roofing system submittals to the Architect for review and approval, including all membrane materials, insulation, mechanical fasteners, bitumen types, sheet metal, accessories, related components and Contractor's Certification from the membrane manufacturer. A copy of the warranty shall also be submitted for approval. Submittals shall be received not less than one month prior to starting the project. No work shall commence until the General Contractor and Roofing Contractor has received approved roofing system submittals from the Architect.

#### 1.05 JOB CONDITIONS:

- A. Sequencing and Scheduling: Coordinate the modified bitumen roofing and flashing with other work to ensure secure anchorage and watertight seals of connecting work.
- B. Environmental Requirements: Do not apply modified bitumen roofing and flashing materials to wet surfaces. Apply materials when ambient temperature is above 20 degrees F. When temperatures are below 45° F, consult cold weather application installation criteria.
- C. Protection: Take necessary precautions against fire and other hazards during delivery, storage and installation of flammable adhesives, solvents and other materials specified herein. Comply with local ordinances and fire regulations in the Installation of materials specified under this section.

#### 1.06 DELIVERY AND STORAGE:

- A. Deliver materials in manufacturer's unopened containers fully identified to show name, brand, type, grade, and thickness.
- B. Store, protect and keep materials dry and out of direct sunlight. Determine manufacturer's recommended maximum storage and use temperature and protect materials against temperatures exceeding that limit.

#### 1.07 WARRANTY:

- A. Provide manufacturers **15 year** warranty that begins at the date of substantial completion, and covers the roofing membrane, associated flashing, roof insulation, roof accessories, vapor barrier (if any) and labor utilized in the installation of the warranted materials. The 15-year warranty shall cover the entire roof system and all related components with no monetary limit, with non-prorated coverage as issued by the membrane manufacturer, with a (5) five-year contractor warranty as part of the manufacturer's issued warranty.
  - 1. Warranty to be signed and countersigned by manufacturer and installer with a copy provided to the owner.

### PART 2 - PRODUCTS

- 2.01 APPROVED MANUFACTURERS: Entire system shall be provided by one of the following approved manufacturers.

- 1. GAF Building Materials Corporation
- 2. Johns Manville Roofing Systems.
- 3. Firestone

#### 2.02 ROOFING INSULATION:

- A. Base layer insulation; rigid boards, minimum density 2 lbs/cu.ft. complying with ASTM 1622, polyisocyanurate with fiberglass perforated facer sheet, 20 psi compressive strength complying with ASTM 1621. Dimensional stability shall comply with ASTM D-2126-87. Provide 3" x 48" x 96" size. R-value 18.5 minimum

1. Approved insulation:
  - a. "GAFTEMP Isotherm" as manufactured by GAF,
  - b. "UltraGard Isocyanurate" as manufactured by Johns Manville
  - c. "ISO 95 + GL as manufactured by Firestone
  
- B. Top layer insulation:  $\frac{3}{4}$ " x 48" x 48" perlite or  $\frac{1}{2}$ " x 48" x 48" wood fiberboard as approved by membrane manufacturer. R-value 1.32 minimum.
  1. Approved perlite insulation:
    - a. "GAFTEMP Permalite" as manufactured by GAF
    - b. "Fesco Board" as manufactured by Johns Manville.
    - c. Approved insulation as listed and approved by Firestone.
  
  2. Approved wood fiber insulation:
    - a. "GAFTEMP Recover Board" as manufactured by GAF
    - b.  $\frac{1}{2}$ " "Reto-fit" manufactured by Johns Manville.
    - c.  $\frac{1}{2}$ " "Fiber Top" as manufactured by Firestone.
  
- C. Tapered insulation for saddles; sloped  $\frac{1}{2}$ "/ft. tapered perlite panels.
  1. Approved tapered insulation
    - a. "GAFTEMP Permalite tapered Roof System as manufactured by GAF
    - b. "Tapered Fesco Board" as manufactured by Johns Manville Inc.
    - c. Approved insulation as listed and approved by Firestone

#### 2.03 ROOFING MEMBRANE:

- A. Provide a fire rated mineral surfaced modified bitumen membrane with a minimum total solar reflectance of 0.70 complying with ASTM C1549, ASTM E903, ASTM E1175, or ASTM E1918; and a minimum thermal emittance of 0.75 complying with ASTM C835, ASTM C1371, or ASTM E408.
  1. Acceptable modified bitumen cap sheet membrane and manufacturers.
    - a. RUBEROID ENERGYCAP TORCH GRANULE FR or RUBERROID ENERGYCAP SBS 30 FR by GAF,
    - b. APPeX 4.5 FR CR OR SBS equivalent by Johns Manville, Inc.
    - c. APP 180 FR COOL UltraWhite or SBS Premium FR UltraWhite by Firestone
  
- B. Fiberglass felts conforming to ASTM D-2178 type VI, continuous strand fiberglass mat 60 lb./inch minimum average tensile strength in both machine and cross machine directions. Felt type shall provide warranty as specified in Section 07500-Paragraph 1.05, Part A.
  1. Approved Fiberglass two-ply base sheet
    - a. "GAFGLAS Ply 6" by GAF,
    - b. "GlasPly Premier" by Johns Manville, Inc.
    - c. Ply VI as manufactured by Firestone
  
- C. Asphalt Primer: Conforming to ASTM D-41
  
- D. Flashing membrane: Smooth surface or mineral surfaced, APP or SBS, modified bitumen as manufactured by the membrane manufacturer to be installed.

- E. Interply Bitumen: Type III roofing and asphalt conforming to ASTM D 312.

#### 2.04 MISCELLANEOUS MATERIALS:

- A. Fasteners: Gripdek plates and screws as manufactured by ITW Builder corporation or equal as approved by roof system manufacturer. Provide fastener length sufficient to anchor base layer of insulation and penetrate through the deck  $\frac{3}{4}$ " minimum to achieve a FM I-60 classification. Provide FM I-90 with-in 100 miles of the coast or where required by local code. Fasteners shall be factory Mutual listed and approved for use with the insulation used.
- B. Copings, gutters, downspouts, scuppers, etc. as per section 07600.
- C. Sealant: As provided by membrane manufacturer.
- D. Termination bars: 0.040 mil finished aluminum with 3  $\frac{1}{2}$ " vertical drop and  $\frac{1}{2}$ " top caulk receiver. Fasten 12" o.c.
- E. Sump pans: Recessed 20 ga. Metal.
- F. Drain and Stack vents, lead 4 lb. Desilverized pig lead.
- G. Plastic cement: Conform to FS SS-C-153C or ASTM D-4586 type II
- H. Traffic Pads: Mineral surfaced bituminous composition boards approximately  $\frac{1}{2}$ " thick, Johns Manville Dnna Tred Plus or "J " Walk, or approved equal as manufactured by the roofing manufacturer. Walkway membrane shall have granules colored different from the field membrane for identification.

### PART 3 - EXECUTION

#### 3.01 INSPECTION:

- A. Examine the substrates and adjoining construction, and the conditions under which the work is to be installed. Do not proceed with the work until unsatisfactory conditions detrimental to the proper and timely completion of the work have been corrected.

#### 3.02 INSTALLATION -GENERAL

- A. Install roof system in strict compliance with manufacturer's instruction.
- B. Provide saddles/crickets at all curbs and equipment bases.
- C. Protect all adjoining and finished surfaces, including, but not limited to walls, glazing systems, pavements, walks and landscaping. Repair damaged areas to "as new" condition at no cost to the owner.
- D. Provide prefabricated jackets and/or pipe portals, weather tight and insect proof, at all pipe clusters. The use of pitch pockets, pitch pans or sealant pockets are strictly prohibited.
- E. Do not install more insulation and membrane than can be made watertight before the end of each day's work.
- F. Repair/replace deteriorated defective or damaged roofing prior to final acceptance by Owner.

### 3.03 INSTALLATION-of the INSULATION (2 layers)

- A. Mechanically attach first layer of double layered insulation in compliance with FM Class I construction and I-60 Windstorm Classification (eleven fasteners per board). Install base layer with long dimension of board perpendicular to metal deck flutes. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof. Apply no more insulation than can be covered with membrane in same day. Along and with-in 100 mile of the coast provide I-90 Windstorm Classification.
- B. Install the High density fiberboard or perlite board in 30 lb. of hot asphalt adhesive full adhesion of the board. Install board with long dimension perpendicular to the long direction of base layer and parallel to the deck flutes. Offset insulation joints 6" minimum between top and bottom layers.

### 3.03 INSTALLATION of the MEMBRANE

- A. Install the Two interply base sheet underlayment of fiberglass felt (Type VI) in 25 lbs. of hot asphalt per 100 square feet of roof area. Lap fiberglass base sheets 19" in such a manner that a two ply configuration is attained over all roof areas.
- B. Apply modified bitumen membrane only over all areas of base ply in strict accordance with manufacturer's requirements. In hot climates use type IV asphalt for John Manville and Firestone's SBS systems, otherwise use type III.
- C. Apply and secure walkway pads in strict compliance with manufacturers recommendations as shown on the drawings.

### 3.04 FLASHING:

- A. Coordinate the installation of flashing materials and roof accessories so as to provide a complete watertight system complying with the combined recommendations of manufacturers and installers involved in the work. Fasten termination bar 12" o.c.
- B. Extend flashings as shown to provide a complete membrane over the area indicated to be flashed. Seal to all projections through the sheet and seal all seams. Bond vertical and horizontal surfaces.

### 3.05 CLEANING:

- A. Repair or replace defaced or disfigured finishes caused by work of this section.

### 3.06 PROTECTION:

- A. Protect building surfaces against damage from roofing work. Where traffic must continue over finished roof membrane, protect surfaces.

END OF SECTION 07520